CLAIMS

What is claimed is:

1. A multi-functional measuring device comprising:

   An elongate rectangular prismatic body having flat upper and lower faces, an elongated rectangular perimeter bounded by a stepped upper long edge and a straight lower long edge and parallel straight short leading and trailing end edges, said upper long edge having stepped subdivisions increasing in width from said lower long edge to the center of the device from either said straight leading or trailing end edge, further having a plurality of linearly arrayed holes corresponding to said steps on said upper long edge, located along the wide side of the measuring device near its straight edge, said holes comprising holes of two types; straight through holes and through holes counter-bored, said holes alternating between said straight through holes and said through holes counter-bored.

2. The measuring device of claim **1** further comprising a V-shaped notch at the mesial location of said stepped upper long edge and said straight lower long edge, said V-shaped notches being oriented transverse to said upper and lower faces and extending the full width across said long edges.

3. The measuring device of claim **1** further comprising a V-shaped notch at the leading and the trailing said end edges and arranged collinear with said array of through holes, said V-shaped notches extending full width across said end edges.

4. The measuring device of claim **1** further comprising a plurality of equal recessed and non-recessed subdivisions dividing each of said steps.

5. The measuring device of claim **1** further comprising a plurality of narrow slots extending partially across the upper edge and face, and subdividing each of said ascending or descending steps.

6. The measuring device of claim **1** further comprising subdivisions of each ascending or descending step by notches extending across the upper edge, across the face of said measuring device, and partially across said lower edge, allowing a narrow portion of the lower edge to remain intact as a straight edge.

7. The measuring device of claim **4** further comprising a series of recesses and lands or slots and lands within the interval demarcated by each step, and mesial V-shaped notches located at the upper and lower edges of the measuring device centerline, whereby said measuring device can be placed on a flat surface and the user can mark a linear distance or evaluate an extant linear distance on a surface by comparison with the measuring device features and then record or transcribe same to another location to be replicated elsewhere once or often through use of a combination of steps, recesses, V-shaped notches, slots, or through holes, when the measuring device is laid upon either its front or back face and the user transcribes tick marks to a working surface connoting one or more intervals depending upon the express steps, recesses, V-shaped notches, slots or through holes utilized.

8. The measuring device of claim **1** further comprising a series of recesses and lands or slots and lands within the interval demarcated by each step, and mesial V-shaped notches located at the upper and lower edges of the measuring device centerline, whereby said measuring device can be placed on a flat surface and the user can mark a linear distance or evaluate an extant linear distance on a surface by comparison with the measuring device features and then record or transcribe same to another location to be replicated elsewhere once or often through use of a combination of steps, recesses, V-shaped notches, slots, or simple and counter-bored holes, when the measuring device is laid upon either its front or back face and the user transcribes tick marks to a working surface connoting one or more intervals depending upon the express steps, recesses, V-shaped notches, slots or simple and counter-bored holes utilized.

9. The measuring device of claim **4**, further comprising a series of recesses and lands or slots and lands within the interval demarcated by each step, and mesial V-shaped notches located at the upper and lower edges of the measuring device centerline, whereby said steps, recesses, V-shaped notches, slots, or through holes can be used in combination to mark a metric length or evaluate an extant linear distance on a surface by comparison with the measuring device features and then record or transcribe same to another location to be replicated elsewhere once or often, when the measuring device is laid upon either its front or back face and the user transcribes tick marks to a working surface connoting one or more intervals depending upon the express steps, counting by five centimeters and estimating the nearest 2.5 centimeter interval, recesses, counting by one centimeter and estimating the nearest 0.5 centimeter interval, V-shaped notches, counting by fifty centimeters and estimating the nearest twenty-five centimeter interval, slots, counting by

one centimeter and estimating the nearest 0.5 centimeter interval, or through holes, counting by five centimeters and estimating the nearest 2.5 centimeter interval, utilized.

10. The measuring device of claim **1**, further comprising a series of recesses and lands or slots and lands within the interval demarcated by each step, and mesial V-shaped notches located at the upper and lower edges of the measuring device centerline, whereby said steps, recesses, V-shaped notches, slots, or simple and counter-bored holes can be used in combination to mark a metric length or evaluate an extant linear distance on a surface by comparison with the measuring device features and then record or transcribe same to another location to be replicated elsewhere once or often, when the measuring device is laid upon either its front or back face and the user transcribes tick marks to a working surface connoting one or more intervals depending upon the express steps, counting by five centimeters and estimating the nearest 2.5 centimeter interval, recesses, counting by one centimeter and estimating the nearest 0.5 centimeter interval, V-shaped notches, counting by fifty centimeters and estimating the nearest twenty-five centimeter interval, slots, counting by one centimeter and estimating the nearest 0.5 centimeter interval or simple and counter-bored holes, counting by five centimeters and estimating the nearest 2.5 centimeters interval for simple holes, and counting by ten centimeters and estimating the nearest five centimeter interval for counter-bored holes, utilized.

11. The measuring device of claim **4**, further comprising a series of recesses and lands or slots and lands within the interval demarcated by each step, and mesial V-shaped notches located at the upper and lower edges of the measuring device centerline, whereby said steps, recesses, V-shaped notches, slots, or through holes can be used in combination to mark intervals in the English system or evaluate an extant linear distance on a surface by

comparison with the measuring device features and then recording or transcribing same to another location to be replicated elsewhere once or often, when the measuring device is laid upon either its front or back face and the user transcribes tick marks to a working surface connoting one or more intervals depending upon the express steps, counting by two inches and estimating the nearest one inch interval, recesses, counting by one-half inch and estimating the nearest 0.25 inch interval, V-shaped notches, counting by eighteen inches and estimating the nearest nine inch interval, slots, counting by one-half inch and estimating the nearest 0.25 inch interval, or through holes counting by two inches and estimating the nearest one inch interval) utilized.

12. The measuring device of claim **1**, further comprising a series of recesses and lands or slots and lands within the interval demarcated by each step, and mesial V-shaped notches located at the upper and lower edges of the measuring device centerline, whereby said steps, recesses, V-shaped notches, slots, or simple and counter-bored holes can be used in combination to mark intervals in the English system or evaluate an extant linear distance on a surface by comparison with the measuring device features and then recording or transcribing same to another location to be replicated elsewhere once or often, when the measuring device is laid upon either its front or back face and the user transcribes tick marks to a working surface connoting one or more intervals depending upon the express steps, counting by two inches and estimating the nearest one inch interval, recesses, counting by one-half inch and estimating the nearest 0.25 inch interval, V-shaped notches, counting by eighteen inches, one-half yard and estimating the nearest nine inch interval, one-fourth yard, slots, counting by one-half inch and estimating the nearest 0.25 inch interval, or simple and counter-bored holes, counting by two inches and estimating

the nearest one inch interval for simple holes, and counting by four inches and estimating the nearest two inch interval for counter-bored holes, utilized.

13. The measuring device of claim **4**, further comprising a series of recesses and lands or slots and lands within the interval demarcated by each step, and mesial V-shaped notches located at the upper and lower edges of the measuring device centerline, whereby one illustrates distance relationships using a number line or counting approach when steps or through holes can be used to illustrate a spatial representation of one unit, recesses can be used to illustrate a spatial representation of sub-units, V-shaped notches can be used to illustrate a spatial representation of one-half a macro-unit, and slots can be used to illustrate a spatial representation of sub-units.

14. The measuring device of claim **1**, further comprising a series of recesses and lands or slots and lands within the interval demarcated by each step, and mesial V-shaped notches located at the upper and lower edges of the measuring device centerline, whereby one can illustrate distance relationships using a number line or counting approach when steps or simple holes can be used to illustrate a spatial representation of one unit, recesses can be used to illustrate a spatial representation of sub-units, V-shaped notches can be used to illustrate a spatial representation of one-half a macro-unit, slots can be used to illustrate a spatial representation of sub-units, and counter-bored holes can be used to illustrate a spatial representation of multiple units.

15. The measuring device of claim **4**, further comprising a series of recesses and lands or slots and lands within the interval demarcated by each step, and mesial V-shaped notches located at the upper and lower edges of the measuring device centerline, whereby one can

acquire measurements visually or tactilely using the attributes of said measuring and layout device by positioning the measuring device in proximity to a length of specific interest to facilitate (a) visual discernment or tactile survey to assess the desired distance first to the crass resolution afforded by the V-shaped notches, (b) then refinement by reference to the resolution afforded by the through holes and steps, and (c) then improved accuracy by comparison to the finer resolution by the use of visual or tactile reference to the series of recesses and lands nearest one of the measurement endpoints.

16. The measuring device of claim **1**, further comprising a series of recesses and lands or slots and lands within the interval demarcated by each step, and V-shaped notches located at the upper and lower ends of the measuring device centerline, whereby one can acquire measurements visually or tactilely using the attributes of said measuring and layout device by positioning the measuring device in proximity to a length of specific interest to facilitate (a) visual discernment or tactile survey to assess the desired distance first to the crass resolution afforded by the V-shaped notches, (b) then refinement by reference to the resolution afforded by the counter-bored holes, (c) subsequently improved accuracy to the resolution afforded by the simple holes and steps, and (d) finally discrimination to greater accuracy by comparison to a finer resolution by the use of visual or tactile reference to the series of recesses and lands nearest one of the measurement endpoints.

17. The measuring device of claim **4**, further comprising a series of recesses and lands or slots and lands within the interval demarcated by each step, and mesial V-shaped notches located at the upper and lower edges of the measuring device centerline, whereby one can transfer or lay out specific measurements visually or tactilely after positioning the measuring device in a convenient location and position, whereupon the user employs his

visual or tactile sense to replicate an observed measurement by successively noting the endpoints of the desired interval relative to (a) the V-shaped notches, (b) the through holes or steps, and (c) the series of recesses and lands nearest the endpoints.

18. The measuring device of claim **1**, further comprising a series of recesses and lands or slots and lands within the interval demarcated by each step, and mesial V-shaped notches located at the upper and lower edges of the measuring device centerline, whereby one can transfer and lay out specific measurements visually or tactilely after positioning the measuring device in a convenient location and position, whereupon the user employs his visual or tactile sense to replicate an observed measurement by successively noting the endpoints of the desired interval relative to (a) the V-shaped notches, (b) the counter-bored holes, (c) the simple holes or steps, and (d) the series of recesses and lands nearest the endpoints.

19. The measuring device of claim **6** whereby one can transfer or lay out specific measurements using said measuring device to accomplish ancillary straightedge functions after positioning the measuring device in a convenient location and position, whereupon the user employs his visual or tactile sense to replicate an observed measurement by successively noting the endpoints of the desired interval relative to (a) the V-shaped notches, (b) the through holes or steps, and (c) the series of recesses and lands nearest the endpoints, following which the user can subsequently employ said uncut narrow portion of the measuring device lower edge to complete lines and rules extending along and about said interval of measurement just transferred or laid out.

20. The measuring device of claim **3** in conjunction with a non-stretchable cord, wire, or other non-stretchable item whereby one can acquire and evaluate curvilinear distances and distances greater in length than said device by comparison of the cord with the gradations of said device, having affixed any convenient length of a non-stretchable cord in a suitable manner, then having employed it as an effective extension of the measuring device length by (a) drawing the cord across the (straight or curvilinear) path to be measured and (b) noting the extent of cord utilized by marking, grasping, knotting, severing or other, whereupon one can then replicate that distance or path using the cord or evaluate the measurement obtained by (c) comparing the cord length of interest to the measuring device, including lengths greater than the measuring device length which can be obtained by wrapping said cord about the leading and trailing V-shaped notches, then counting the multiple strands arranged on each face of the measuring device, after which (d) the remainder length of said cord and distances lesser than the measuring device length can be evaluated by successive comparison to first the leading and trailing V-shaped notches, next the through holes and steps, and further a series of recesses and lands nearest its end.

21. The measuring device of claim **2** whereby one can locate various mid-points of planar shapes or chord lengths by use of said device's center-line indications after aligning said measuring device parallel to the axis or chordal length sought to be bifurcated, and positioning it in an upright or inverted attitude, dependent upon the downside or overhead position of the work objective and the degree of resolution desired, whereupon the user interprets the difference between the proximate work surface endpoint and the measuring device proximate end, then similarly interprets the difference between the distal work surface endpoint and the measuring device distal end, thus enabling the user to compare

the two quantities derived and subsequently equalize them in a series of iterative motions, moving the measuring device in a manner that lessens the larger quantity and increases the smaller quantity until a point in time when the two difference quantities have been set equal, at which time the mesial V-shaped notch designates the mid-point.

22. The measuring device of claim **1** further comprising a series of recesses and lands or slots and lands within the interval demarcated by each step, and V-shaped notches located at the upper and lower ends of the measuring device centerline, whereby one can deploy said device in successive juxtapositions to divide an area into any number of equally or unequally spaced intervals by applying it obliquely along the intended range of measured subdivisions, whereupon one chooses the desired number of intervals and selects the measuring device features which shall correspond to each interval, then indexes the measuring device obliquely across the surface to be divided such that said selected features span the objective area, and demarcates the desired intervals with tick marks or another method, thus enabling the user subsequently to relocate the measuring device to another parallel location on said surface, again indexing the same features and completing a second set of demarcations, which two sets of demarcations, more can be had over a large area, then illustrate the said equally or unequally spaced intervals or subdivisions and can be connected by lines or rulings as desired.

23. The measuring device of claim **1** further comprising a series of recesses and lands or slots and lands within the interval demarcated by each step, and V-shaped notches located at the upper and lower ends of the measuring device centerline, whereby, in conjunction with one or more writing instruments or pins, one can complete arcs and circles at various radii when the user elects to draw an arc with a radius denoted by any selected features

on the measuring device and further utilizes said writing instruments or pins by inserting them into said simple or counter-bored holes; or suitably affixing them to other measuring device features, the user then positions one of said accoutrements at the focus of the arc, center of a circle, and proceeds to swing the measuring device in either radial direction, thus producing the desired curve.

24. The measuring device of claim **1**, further comprising a series of recesses and lands or slots and lands within the interval demarcated by each step, and V-shaped notches located at the upper and lower ends of the measuring device centerline, in conjunction with one or more writing instruments, sticks or pins, whereby one can derive ranges or elevations through the process of geometric triangulation while observing a distant object or its shadow, for which purpose, the user may position the measuring device with its axis parallel to the axis of said objective image, and from a single vantage point select two features: V-shaped notches, simple or counter-bored holes, steps, recesses or lands, of the measuring device which optically coincide with the extrema of said objective image, and after noting the distance between said selected features of the measuring device, and noting the distance from said vantage point to the base, point of intersection, of the measuring device axis with the ground or reference plane supporting both the measuring device and the objective image, of the measuring device using the measuring device itself, and noting the range from said base point to the base of said objective image using the measuring device itself, one has acquired data sufficient to characterize two similar triangles by proceeding to solve the classical geometric relationships that govern such triangles and produce a measurement of said distant object using only the measuring device and said easily improvised accoutrements.

25. The measuring device of claim **1**, further comprising a series of recesses and lands or slots and lands within the interval demarcated by each step, and V-shaped notches located at the upper and lower ends of the measuring device centerline, in conjunction with any suitable fulcrum placed in its mesial V-shaped notch or hole, whereby one can utilize it as a balance beam capable of comparing masses when the user supports the measuring device on a provided fulcrum and positions two masses, one on either side of the measuring device centerline, whereupon if the system defined by the foregoing is not balanced, one end of the measuring device will tip downward, indicating the user can move the mass on the downward tipping end of the measuring device inward, toward the measuring device centerline, and alternatively the user can move the mass on the upward tipping end of the measuring device outward, away from the measuring device centerline, both these actions taken to approach more closely the point of balance, which foregoing procedure can be iterated until said masses are positioned at the point of balance, state of equilibrium, at which the measuring device, balance arm, remains level, following which the user can note the positions of said masses and, using the features of the measuring device: V-shaped notches, simple and counter-bored holes, steps, recesses and lands, evaluate the moment arm associated with each mass, thus enabling the user to know the proportion between the masses, and further, if one mass is known, the user may calculate by the above said means the remaining mass.

26. The measuring device of claim **1**, further comprising a series of recesses and lands or slots and lands within the interval demarcated by each step, and V-shaped notches located at the upper and lower ends of the measuring device centerline, in conjunction with any suitable fulcrum placed in its central V-shaped notch or hole, and one or more known

masses, whereby one can determine the magnitude of a force applied elsewhere along the length of said measuring and layout device when the user supports the measuring device on said fulcrum provided and positions one or more known masses on one side of the measuring device centerline and a suitable force application device: yoke, lanyard, noose, cradle or other such mechanical construct connected to the force with a suitable uni-axial linkage, on the other side of the measuring device centerline, whereupon if the system defined by the foregoing is not balanced, one end of the measuring device will tip downward, indicating the user may move the combined mass or "force" on the downward tipping end of the measuring device inward, toward the measuring device centerline, and concurrently the user may move the combined mass or "force" on the upward tipping end of the measuring device outward, away from the measuring device centerline, both these actions taken to approach more closely the point of balance, which foregoing procedure can be iterated until said mass and "force" are positioned at the point of balance, state of equilibrium, at which the measuring device, balance arm, remains level, following which the user can note the positions of said mass and "force" and, using the features of the measuring device: V-shaped notches, simple or counter-bored holes, steps, recesses and lands, evaluate the moment arm associated with each, thus enabling the user to know the proportion between the mass and the applied force, and further the user may then calculate the magnitude of the applied force.

27. The measuring device of claim **1**, further comprising a series of recesses and lands or slots and lands within the interval demarcated by each step, and V-shaped notches located at the upper and lower ends of the measuring device centerline, in conjunction with two writing instruments or pins, whereby one can perform functions customarily associated

with trammel points or dividers when the user selects an interval utilizing any of the measuring device features: V-shaped notches, simple or counter-bored holes, steps, recesses or lands, to denote its endpoints and insert or suitably affix said accoutrements after which the user can produce layouts and trials by "stepping off" the designated interval repeatedly along various paths after the fashion of the use of trammel points or dividers as used in various art work, crafts, design, navigation and the like, and subsequently make refinements to his selected interval by utilizing the measuring device to evaluate the remainder or error resulting from the foregoing procedure.

28. The measuring device of claim **1**, further comprising a series of recesses and lands or slots and lands within the interval demarcated by each step, and V-shaped notches located at the upper and lower ends of the measuring device centerline, in conjunction with one or two writing instruments or pins, whereby one can perform the functions of a scriber when the user selects an interval utilizing any of the measuring device features: V-shaped notches, simple or counter-bored holes, steps, recesses or lands, to denote its endpoints and insert or suitably affix said accoutrements, whereupon the user can produce layouts and trials by dragging the designated interval along the margin to be scribed as would an artisan or craftsman seeking to contour scribe, match line or trim a work piece and subsequently make refinements to his selected interval by utilizing the measuring device to evaluate the remainder or error resulting from the foregoing procedure.

29. The measuring device of claim **1** further comprising a series of recesses and lands or slots and lands within the interval demarcated by each step, and V-shaped notches located at the upper and lower ends of the measuring device centerline, whereby one can find

various mid-points of an opening or orifice when said measuring device is aligned parallel to the plane of said opening or orifice sought to be evaluated, and positioned in either an upright or inverted attitude, dependent upon the downside or overhead position of the work objective and the degree of resolution desired, allowing the user to interpret the difference between the proximate work surface endpoint and the measuring device proximate end, then similarly interpret the difference between the distal work surface endpoint and the measuring device distal end, using the measuring device features: V-shaped notches, simple or counter-bored holes, steps, recesses and lands, after which the user can compare the two quantities derived and subsequently equalize them in a series of iterative motions, moving the measuring device in a manner that lessens the larger quantity and increases the smaller quantity, upon which, when the two difference quantities have been set equal, the mesial V-shaped notch designates the mid-point and readily supports a plumb bob or other location projection device, and said measuring device features may again be used to project the location of various intervals onto the plane of said opening or orifice.